

International Application No.	:	PCT/EP00/08312
International Filing Date	:	25 AUGUST 2000
U.S. Serial No.	:	10/070,000
Deposit Date U.S. Nat'l Phase	:	1 MARCH 2002
Priority Date(s) Claimed	:	1 SEPTEMBER 1999
Applicant(s)	:	HU, Jung-Chih, et al
Title: ELECTROPLATING SOLUTION FOR COPPER ELECTROPLATING		

PRELIMINARY AMENDMENT

Commissioner for Patents
Box PCT
Washington, D.C. 20231
Sir:

Prior to calculating the national fee, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Page 27, after paragraph 8, please insert the following:

--Fig 14 Showed the images of pattern wafer before electroplating

Fig 15 The relationship of Cu film resistivity vs. various concentration of HCl ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ at 90 g/l, H_2SO_4 at 197 g/l, current density at 2.4 A/dm² and time at 2 min)

Fig 16 The uniformity at the top of the trench is (a) not smooth without HCl addition (b) more smooth with HCl addition

Fig 17 Voids are obviously formed in the trench without any additive agent addition

Fig 18 The relationship of Cu film resistivity vs. various concentration of $(\text{NH})_2\text{CS}$.
($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ at 90 g/l, H_2SO_4 at 197 g/l, HCl at 70 ppm, current density at 2.4 A/dm² and time at 2 min)

Fig 19 SEM image of the electroplated Cu film at 0.03 g/l of thiourea addition, applied current density is 2.4 A/dm².

Fig 20 SEM image of the electroplated Cu film at 0.054 g/l of thiourea addition, applied current density was 2.4 A/dm²

Fig 21 The relationship of Cu film resistivity vs. deposition time ((CuSO₄•5H₂O at 90 g/l, H₂SO₄ at 197 g/l, HCl at 70 ppm current density at 1.2 A/dm²)